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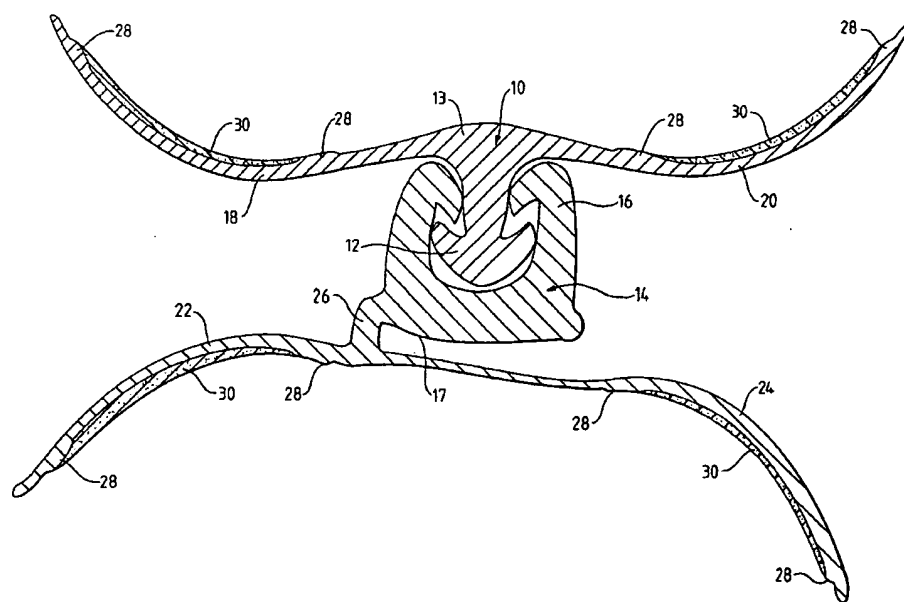
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(54) Title: RECLOSABLE FASTENERS FOR PLASTICS BAGS AND THE LIKE



(57) Abstract: A reclosable fastener or zipper comprises interengageable male and female profile members (12, 16), each provided on a base (13, 17). One or both of the members is/are provided with a lateral flange (18, 20, 22, 24). One or more of such flanges is/are provided with a pair of spaced, shallow convexities (28) with a layer of sealant material (30) co-extruded into the zone or zones between the convexities.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

RECLOSABLE FASTENERS FOR PLASTICS BAGS AND THE LIKEField of the invention

This invention relates to a closure strip or zipper for use as a reclosable fastener for plastics bags, pouches, etc. It is also concerned with methods of manufacturing such fasteners. Such zippers comprise male and female profile elements located on a pair of opposed base members. The base members are arranged to be bonded to a substrate, such as a film, in the manufacture of the reclosable bags, pouches, etc. Each base member and its profiled element are co-extruded. Such a zipper is usually flanged, i.e. with one or both of the base members extending laterally out beyond the region of the male/female closure.

It is known to provide zippers where an adhesive is provided on the flange or flanges, to aid in the welding of the flange or flanges to a substrate, i.e. a plastics film or web.

One of the ongoing objectives in the design of such zippers is to reduce the heat required to seal the flanges to the substrate material. Excessive heat is always a problem and the lower the sealing temperature the easier it is to produce an acceptable product.

Another objective is to avoid or at least minimise leakage of the adhesive material.

Summary of the invention

It is an object of the present invention to seek to meet both these objectives.

In accordance with the invention there is provided a reclosable fastener comprising interengageable male and female profile members, each provided on a base, and with one base being connected to a lateral flange, wherein said flange is provided with a pair of spaced, shallow convexities with a layer of sealant material co-extruded into the zone between the convexities.

Also in accordance with the invention there is provided

a reclosable fastener comprising interengageable male and female profile members, each provided on a base, and with at least two lateral flanges connected to one base or to the two bases, wherein one or more of said flanges is provided with
5 a pair of spaced, shallow convexities with a layer of sealant co-extruded into the zone or zones between the convexities.

Also in accordance with the invention there is provided a method of extruding a reclosable fastener which comprises extruding a male profile member on a base and a female profile
10 member on a base, with a lateral flange connected to one base and with a pair of spaced, shallow convexities proud of the flange, and co-extruding a layer of sealant material into the zone between the convexities.

Also in accordance with the invention there is provided
15 a method of extruding a reclosable fastener which comprises extruding a male profile member on a base and a female profile member on a base, with at least two lateral flanges connected to one base or to the two bases, and with a pair of spaced, shallow convexities on one or more of said flanges, and co-
20 extruding a layer of sealant material into the zone or zones between the convexities.

Preferably, in the co-extrusion process, the sealant material does not fill the zone or zones right up to the zone ends. When pressure is applied in the sealing of the zipper
25 to the film or web, there is therefore space into which the sealant material can travel, thereby reducing the risk of leakage.

In a multi-flanged zipper this zone of infilled sealant material can be provided on some or all the flanges.

30 Brief description of the drawings

In order that the invention may be more fully understood, an embodiment of zipper in accordance with the invention will now be described by way of example and with reference to the accompanying drawings, in which:

35 Fig. 1 is a shadowgraph of the zipper in accordance with

the invention; and,

Fig. 2 is a schematic illustration giving typical dimensions for a flange of the zipper shown in Fig. 1.

Description of the preferred embodiment

5 Referring first to Fig. 1, this shows a zipper comprising a first profile member 10 having a male element 12 on a base 13 and a second profile member 14 having a female element 16 on a base 17. The profile members 10, 14 can be extruded polymeric material, such as LDPE. The first profile member 10 10 has two lateral flanges 18 and 20 extending from the base 13. The second profile member 14 has two lateral flanges 22 and 24. The second profile member 14 is connected to its flanges 22, 24 not centrally but at a margin of the base 17, thereby to provide a hinged link via a leg 26.

15 Each of the flanges 18, 20, 22, 24 is provided with a pair of spaced, shallow convexities 28 formed from the material of the flange. Between the respective pairs of convexities 28 are infilled, co-extruded layers 30 of a sealant material, such as EVA for example. In the co- 20 extrusion process, the sealant material preferably does not wholly fill the zones between the convexities 28, but stops short of the zone ends and is slightly proud of the convexities. In this way, when heat and pressure is applied in the process of sealing the flanges to an adjoining 25 substrate, the sealant material will be squeezed into the space left available, reducing in thickness to the depth of the convexities. Thus, leakage of sealant will be reduced or eliminated.

Fig. 2 shows flange 18 on an enlarged scale and 30 schematically. The dimensions given in Fig. 2 are in millimetres. It will be noted that the convexities 28 are not both the same length; the one nearer the profile of the zipper is longer. However, they could be of the same length. Also, the thickness of the outer end 32 of the flange is less than 35 the thickness of the inner portion 34 of the flange. Again,

these thicknesses could be the same, depending upon the extrusion process. The thickness of the sealant layer is 0.070mm. This is about 44% of the overall thickness of the flange 18 at this zone.

5 The dimensions are summarised as follows:

	Length of sealant layer	3.000mm
	Thickness of sealant layer	0.070mm
	Thickness of convexities	0.070mm
	Length of outer end 32 of flange	0.500mm
10	Thickness of outer end 32 of flange	0.110mm
	Thickness of inner end 34 of flange	0.160mm

These dimensions are given by way of example only.

Although in the illustrated embodiment the reclosable fastener or zipper is shown as having four flanges, the
15 invention is equally applicable to a zipper having one, two or three flanges. In the case of a multi-flanged zipper, one or more of the two, three or four flanges may be provided with the two shallow, sealant-constraining convexities.

CLAIMS:

1. A reclosable fastener comprising interengageable male and female profile members, each provided on a base, and with one base being connected to a lateral flange, wherein
5 said flange is provided with a pair of spaced, shallow convexities with a layer of sealant material co-extruded into the zone between the convexities.

2. A reclosable fastener comprising interengageable male and female profile members, each provided on a base, and
10 with at least two lateral flanges connected to one base or to the two bases, wherein one or more of said flanges is provided with a pair of spaced, shallow convexities with a layer of sealant co-extruded into the zone or zones between the convexities.

15 3. A reclosable fastener according to claim 2, in which each base is connected to two respective lateral flanges.

4. A reclosable fastener according to any preceding claim, in which the layer of sealant material is of the order of 3mm in lateral width.

20 5. A reclosable fastener according to any preceding claim, in which the layer of sealant material is of the order of 0.07mm in thickness.

6. A reclosable fastener according to any preceding claim, in which the thickness of the layer of sealant material
25 is of the order of 44% of the combined thickness of the sealant and flange.

7. A reclosable fastener according to any preceding claim, in which the convexity which is nearer to the profile member has a greater lateral width than the convexity which
30 is further from the profile member.

8. A reclosable fastener according to any preceding claim, in which the thickness of the flange or flanges is less outwardly of the outer convexity than inwardly of the inner convexity.

35 9. A reclosable fastener according to any preceding

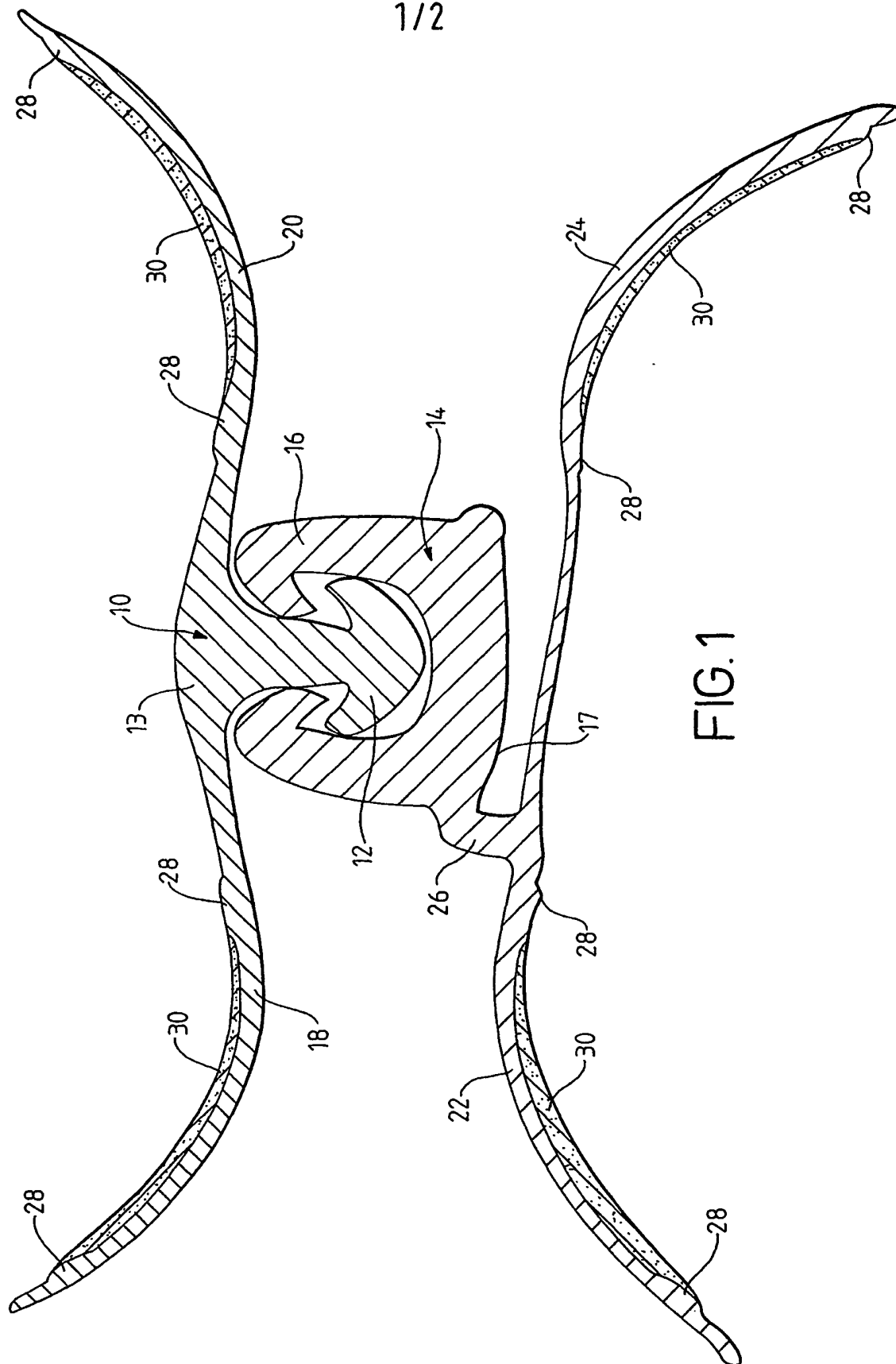
claim, in which one said base is connected by a hinge joint to a lateral flange or flanges.

10. A method of extruding a reclosable fastener which comprises extruding a male profile member on a base and a
5 female profile member on a base, with a lateral flange connected to one base and with a pair of spaced, shallow convexities proud of the flange, and co-extruding a layer of sealant material into the zone between the convexities.

11. A method of extruding a reclosable fastener which
10 comprises extruding a male profile member on a base and a female profile member on a base, with at least two lateral flanges connected to one base or to the two bases, and with a pair of spaced, shallow convexities on one or more of said flanges, and co-extruding a layer of sealant material into the
15 zone or zones between the convexities.

12. A method according to claim 10 or 11, in which in the said co-extrusion process the sealant material does not fill the zone or zones to the zone ends.

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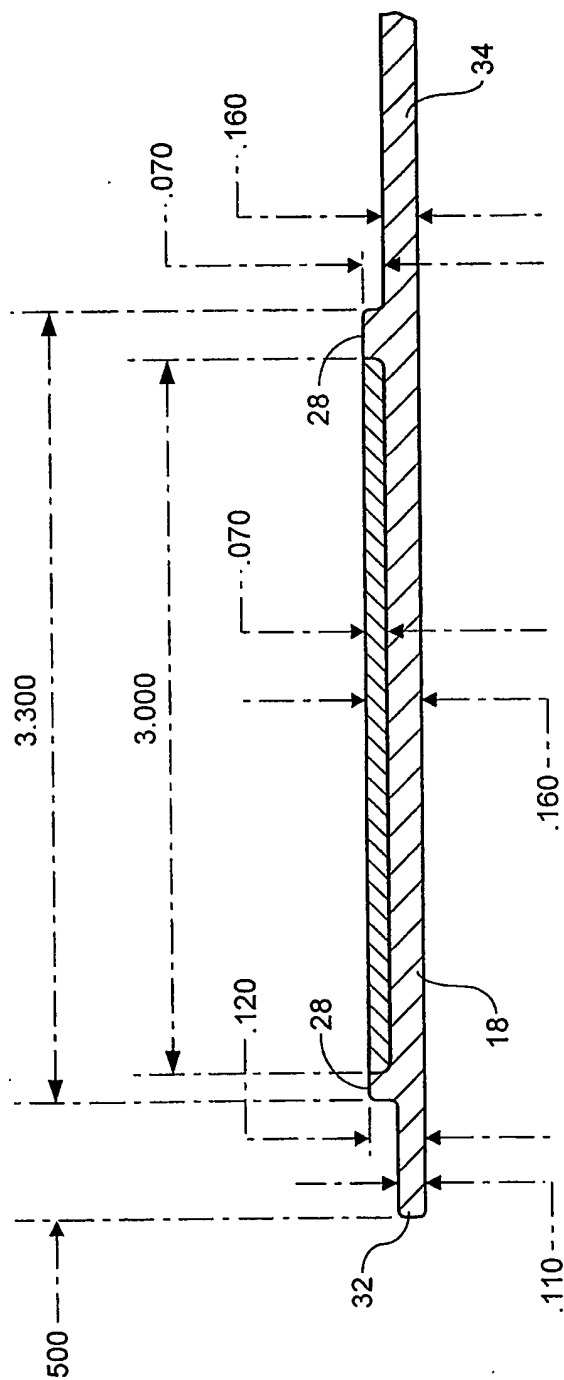


FIG. 2

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A44B19/16 B65D33/25

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A44B B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 655 273 A (REYNOLDS CONSUMER PRODUCTS INC) 12 August 1997 (1997-08-12) column 4, last paragraph -column 5, paragraph 2 column 6, paragraph 2 - paragraph 3 column 6, last paragraph -column 7, paragraph 1 column 8, paragraph 4 -column 9, line 12; claims 1-3,7,8,10; figures 2,7,14-16 ---	1-3,5, 10,11
A	US 4 835 835 A (MINIGRIP INC.) 6 June 1989 (1989-06-06) column 6, line 42 -column 7, paragraph 1; claims 1-3,6,15; figure 5 --- -/--	1,10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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& document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Int l Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 354 541 A (MINIGRIP INC.) 19 October 1982 (1982-10-19) column 2, line 59 -column 5, paragraph 1; claim 1; figures 1-5 ----	1
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Information on patent family members

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